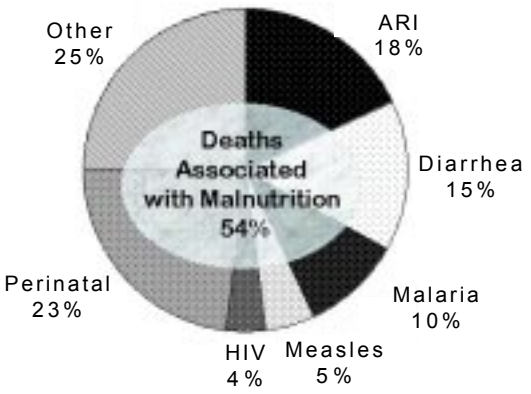
Introduction

WHO estimates that environmental risk factors account for 25% of the overall burden of disease, and 30% of that burden falls on children under-five, particularly in developing countries (Briggs 2003). Of the many diseases and hazards that fall within the purview of environmental health, two of the major ones related to child mortality and morbidity are diarrheal diseases and vector-borne diseases (malaria).

According to WHO's Global Burden of Disease (GBD) 2002 estimates, diarrhea accounts for the deaths of nearly 1.6 million or 15% of children under-five each year in developing countries (World Health Report 2003). Based on a June 2003 Lancet article, the number may be as high as 2.3 million. Still, a review of 60 studies of diarrhea morbidity and mortality published from 1990 to 2000 concluded that diarrhea causes 2.5 million deaths per year, although morbidity remains relatively unchanged (Kosek et al. 2003). Despite different methods and sources of information, each successive review of the diarrhea burden over the past decades has demonstrated relatively stable morbidity despite the decline in mortality.

Similarly, among the 10.5 million children under-five who died worldwide in 2002, over a million deaths or 10% of all under-five deaths were due to malaria (World Health Report 2003). Malaria accounts for one in five childhood deaths in Africa, and the consequences of malaria such as anemia, low birth weight and neurological problems frequently

Proportional Mortality Among Under Fives Worldwide 2002



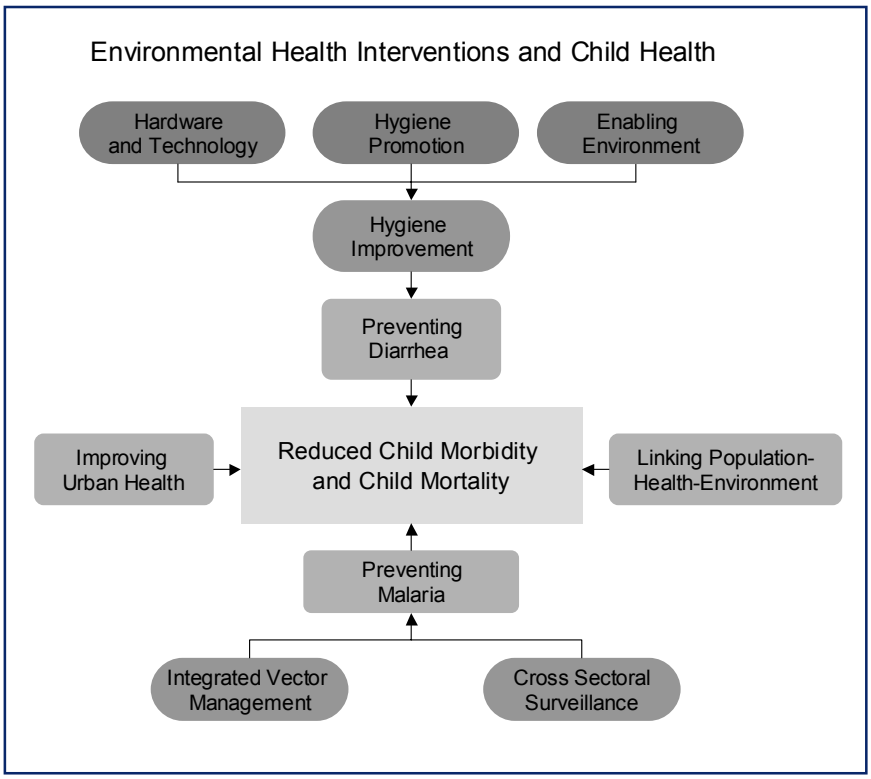
Sources: For cause-specific mortality: Evidence and Information for Policy/WHO Child and Adolescent Health and Development, 2002; For malnutrition: Pelletier DL, et al. AMJ Public Health 1993,83:1130-3

compromise the health and development of millions of children worldwide. For example, of the more than 500,000 African children who develop cerebral malaria each year, 10%-20% die, and approximately 7% are left with permanent neurological damage (RBM Fact Sheet 2001). Likewise, chronic anemia as a result of malaria, adversely affects a child's growth and development.

About EHP

The Environmental Health Project (EHP) began a second five-year contract in June 1999, under the direction of the Office of Health, Infectious Diseases and Nutrition in USAID's Bureau for Global Health (BGH/HIDN). EHP provided access to a broad range of capabilities for missions and bureaus wishing to include environmental health preventive components, while advancing the state-of-the-art of these components.

EHP had two objectives. The principal objective was to reduce mortality and morbidity in children under-five by improving environmental conditions or reducing exposure to disease agents associated with infectious diseases of major public health importance. The second objective was to provide a mechanism for access by diverse interests within USAID to a broad range of expertise in environmental health.



Focus Areas

1. Hygiene Improvement for Diarrhea Prevention

Child mortality from diarrhea has declined by over 50% from 4.6 million deaths in 1980. Yet, a parallel reduction in diarrhea-related morbidity has not been seen. Lack of safe water, basic sanitation and hygiene may account for as much as 88% of the disease burden due to diarrhea. Over the past two decades, USAID's support of child survival programs has contributed to the reduction of childhood diarrhea mortality through case management and use of oral rehydration in combination with strategies to improve host resistance and improved nutrition. To facilitate further progress in reducing overall diarrhea morbidity, more attention will need to be paid to diarrhea prevention through hygiene improvement interventions, which have been demonstrated to be effective in terms of public health impact.

Studies have shown that hygiene improvement interventions such as improved water, sanitation and hygiene have resulted in a 30%-50% reduction in the burden of diarrheal diseases (Esrey et al. 1991; World Bank 1993; Curtis and Cairncross 2003). The Bellagio Child Survival Study Group also includes water/sanitation/hygiene as one of the top ten proven preventive interventions for deaths of under-fives (Bellagio Study Group on Child Survival, Lancet 2003).

Based on these findings, EHP developed the Hygiene Improvement Framework (HIF)—a comprehensive approach to diarrhea prevention that addresses three elements: improving access to hardware (water, sanitation, and household technologies); hygiene promotion (promotion of hygiene behavior such as handwashing, safe excreta disposal, and safe household water management); and supporting an enabling environment (policy improvement, partnerships, and institutional strengthening).

Focus Countries: Benin; DR Congo; Dominican Republic; Nepal; Nicaragua; Peru; West Bank/ Gaza; Zambia

2. Prevention and Control of Malaria and Vector-Borne Diseases

USAID is committed to reducing the burden of malaria. Since the start of USAID's Infectious Disease Initiative in 1998, the Agency has significantly stepped up its efforts in the battle against malaria. USAID is working in close collaboration with the Roll Back Malaria partnership and others to reduce the devastating impact of malaria on developing countries, particularly in Africa,

where 90% of malaria deaths occur. An objective of USAID in its battle against malaria is to increases access to technologies for malaria prevention.

EHP worked with national malaria control programs to improve surveillance and vector management for prevention and control of malaria and other vector-borne diseases. To help malaria control personnel understand the patterns of transmission and target their interventions for greatest impact, EHP's cross-sectoral surveillance (XS) activities focused on development of methods that collect, integrate and analyze various types of information (epidemiological, environmental, entomological and demographic). Related to vector management, EHP promoted integrated vector-management (IVM) to help ministries of health assess the effectiveness of selected vector control methods and identify appropriate integrated strategies including community-based approaches.

Focus Countries: ANE Region; Eritrea; Mozambique; Nepal; Uganda; Zambia

3. Linking Population, Health and the Environment

Recognizing the nexus between population and the environment as crucial for achieving sustainable development and biodiversity conservation, USAID supported the Voahary Salama Association (VS), an NGO umbrella organization, that implements the integrated population, health and environment (PHE) program along Madagascar's forest corridors. EHP, in collaboration with other partners, played a major role in developing institutional and technical capacity of local NGOs to implement integrated activities in 160 Malagasy communities covering a population of 120,000 between 2000 and 2004. Systematic monitoring and evaluation under EHP's direction showed that integrated programs can be very effective at relatively low costs. Substantial improvements of key PHE indicators overall or in specific intervention areas were seen in contraceptive prevalence rates, immunization coverage, access to safe water and basic sanitation, and the practice of less destructive natural resource management methods. Health indicators such as malnutrition and diarrhea prevalence, however, remained high with poverty and natural disasters from cyclones as important contributing factors.

Focus Country: Madagascar

4. Improving Health for the Urban Poor

Two significant efforts have been at the core of EHP's urban health portfolio: the USAID/India Urban Slum Child Health Program and the USAID/Asia Near East (ANE) Bureau Urban Health Initiative. In India, EHP has conducted slum-based assessments and child health programs through local NGOs in four cities and assisted the Government of India in developing national level strategies and models for health programs for the urban poor.

For the ANE initiative, EHP conducted a literature review of existing studies on urban slum child health, implemented a pilot urban poor health program in Cairo, and organized a regional urban health workshop in India for USAID missions in ANE to raise awareness of urban health issues, share experiences and advocate for increased urban health programming.

Focus Countries: Egypt; India

Key Lessons Learned

EHP has sought to integrate environmentally-related prevention measures with child health programs and to advocate for the inclusion of hygiene/health activities in water supply and sanitation activities. Similarly, EHP has sought to improve malaria control and prevention programs; worked with sector-specific projects in health, population and natural resource management to foster greater collaboration and increase their effectiveness and sustainability; and raised awareness of the health issues of urban poor children and provided models for urban programming.

The key lessons learned from the EHP focus areas, based on five years of EHP experience (1999–2004) are as follows:

- √ The Hygiene Improvement Framework is a flexible tool that allows program planners and managers to use single or multiple components in different programmatic contexts—child health or primary health care programs or water and sanitation activities or other programs—to achieve results.
- √ In areas prone to epidemics of malaria and other vector-borne diseases, understanding the local distribution of the disease and its relation to environmental and demographic factors will help public health officials improve the prevention and control activities they direct.
- √ Integrated Vector Management is now the accepted technical framework for vector control programs for malaria and other vector-borne diseases.
- √ Integrated population, health and environment programs that are implemented through local NGOs in partnership with donor funded projects can be very effective and achieve results in multiple sectors at relatively low costs.
- √ Focusing child health interventions in urban settings is crucial. Evidence shows that the health status of children in urban poor settings is as bad and often worse than in rural areas. Urban poor children under-five suffer more and die more often from diarrhea and acute respiratory infections than rural children.

About the Lessons Learned Papers

Advancing Environmental Health for Disease Prevention: Past Experiences and Future Directions is a collection of papers that provide a concise overview of end-of-project lessons learned from five years (1999–2004) of EHP's work related to hygiene improvement, malaria control and prevention through integrated vector management and cross-sectoral surveillance, linking population, health and environment and improving health for the urban poor.

The lessons are approaches and practices that offer ideas about what works in a given situation and have implications for future programming. Lessons are often "lessons from" a specific activity, and not all lessons may be universal in scope and application. The intended audience for Lessons Learned is USAID, international organizations, PVOs and NGOs working in environmental health programming. The Lessons Learned Papers are based on activity-specific background papers and reports written by EHP Activity Managers and the Information Center Staff.

References for Further Reading

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The Lessons Learned Papers were prepared by Eugene Brantly, Sarah Fry, Eckhard Kleinau, May Post and Fred Rosensweig of the Environmental Health Project with editorial and design assistance from Milton Stern and Abdulzatar Kuku. Thanks are due to Sandra Callier and Craig Hafner of the Environmental Health Project and John Austin, John Borrazzo, Matt Lynch, Merri Weinger and Stephanie Wilcock of USAID, who reviewed drafts and provided useful comments. EHP also acknowledges Siddharth Agarwal, Steven Nakashima, Odile Randriamananjara, Jennifer Talbot and Pandu Wijeyaratne for their insigtful comments.